CLAIMS

What is claim is:

5   1.   A pulsed plasma accelerator comprising two electrodes (1), dielectric bars (2) arranged between the electrodes and made from an ablating material, a discharge channel with an open end part, with discharge channel walls being defined by the surfaces of electrodes (1) and of dielectric bars (2), an energy accumulator (11), current supplies (14,15) for connecting of the electrodes (1) with the energy accumulator (11), which

10   together with the electrodes (1) and the energy accumulator (11) define an external electric circuit, an insulator (3) arranged between the electrodes (1) at the end part of the discharge channel opposite to the open end part, and a discharge-initiating device (4), characterized in that the characteristics of the external electric circuit of the accelerator are selected on condition: $2 \leq C/L$, where C is the electric capacity of the external electric circuit, μF, L is

15   the inductance of the external electric circuit, nH, with the value thereof meeting the condition: $L \leq 100$ nH.

2.   The accelerator of claim 1, wherein the characteristics of the external electric circuit of the accelerator are selected on condition: $2 \leq C/L \leq 5$.

3.   The accelerator of claim 1, wherein the inductance of the external electric

20   circuit is selected in the range of $L = 20 - 100$ nH.

4.   The accelerator of claim 1, wherein the electrodes (1) are made in the form of plates.

5.   The accelerator of claim 1, wherein the length of the electrodes (1) exceeds the section size of the dielectric bars (2) in the direction of plasma acceleration.

25   6.   The accelerator of claim 1, wherein the dielectric bars are adapted for advancement toward the discharge channel midline, with the accelerator being equipped with a retainer (7) for retaining the dielectric bars (2) in a proper position and a device (6) for advancing said dielectric bars.

7.   The accelerator of claim 1, wherein the insulator (3) arranged between the

30   electrodes (1) is provided with a slot facing an acceleration channel.

8.   The accelerator of claim 1, wherein the insulator (3) arranged between the electrodes (1) is provided with protrusions (9) facing the dielectric bars (2), and the dielectric bars (2) are provided with recesses (8) configured to conform the shape of protrusions (9) of the insulator (3).

9.   The accelerator of claim 1, wherein each of the dielectric bars (2) is provided with at least one longitudinal protrusion (10) facing the electrode (1).

10.   The accelerator of claim 1, wherein the surfaces of the dielectric bars (2) facing the discharge channel are beveled with respect to the midline of the discharge channel so that the distance b_{min} between the opposite surfaces of the dielectric bars (2) on the side of the insulator (3) and the distance b_{max} between the opposite surfaces of the dielectric bars (2) on the side of the open end of the discharge channel satisfy the condition: $b_{max}/b_{min} \geq 1.2$.

11.   The accelerator of claim 1, wherein the parts of the electrodes (1) arranged behind the dielectric bars (2) in the direction of plasma acceleration are positioned at an angle α with respect to the discharge channel midline, with the value of angle α being selected on condition: $10° \leq \alpha \leq 40°$.

12.   The accelerator of claim 1, wherein the parts of the electrodes (1) arranged behind the dielectric bars (2) in the direction of plasma acceleration are made continuously narrowing in the said direction, with the maximal width d_{max} and minimal width d_{min} of the electrodes (1) are selected according to the condition: $d_{max}/d_{min} \geq 2$.

13.   The accelerator of claim 1, wherein the length and width of one of the electrodes (1) serving as an anode exceeds the length and width of other electrode (1) serving as a cathode.

14.   A method for plasma acceleration including the steps of igniting a discharge in the discharge channel of the plasma accelerator by means of a discharge-initiating device (4) and pulsed applying of discharge voltage from an energy accumulator (11) via an external electric circuit to electrodes (1) of the plasma accelerator between which are arranged dielectric bars (2) made from ablating material, characterized in that quazi-nonperiodic pulse discharges are ignited and maintained in the discharge channel at the discharge voltage U of at least 1 000 V and the characteristics of the external electric circuit satisfying the condition: $2 \leq C/L$, where C is the electric capacitance of the external electric circuit, μF, and L is the inductance of the external electric circuit, nH, with the capacitance value satisfying the condition: $L \leq 100$ nH.

15.   The method of claim 14, wherein the quazi-nonperiodic discharges are ignited and maintained with the characteristics of external electric circuit selected on the condition: $2 \leq C/L \leq 5$.

16.   The method of claim 14, wherein the quazi-nonperiodic discharges are ignited and maintained with the discharge voltage U=1 000 – 2 000 V.

17.   The method of claim 14, wherein the inductance L of the external electric circuit is selected in the range of L = 20 - 100 nH.

18.   The method of claim 14, wherein plasma acceleration is provided by means of electrodes (1) made in the form of plates.

19.   The method of claim 14, wherein plasma acceleration is provided by means of electrodes (1) having length exceeding the section size of dielectric bars (2) in the direction of plasma acceleration.

20.   The method of claim 14, wherein in the process of plasma acceleration, the dielectric bars (2) are movable toward a midline of the discharge channel until they are fixed with respect to the surface of the electrodes (1).

21.   The method of claim 14, wherein plasma acceleration is provided in the discharge channel wherein the surfaces of the dielectric bars (2) are made beveled with respect to the discharge channel midline so that the distance b_{min} between the opposite surfaces of the dielectric bars (2) on the side of the insulator (3) and the distance b_{max} between the opposite surfaces of the dielectric bars (2) on the side of the open end of the discharge channel satisfy the condition: $b_{max}/b_{min} \geq 1.2$.

22.   The method of claim 14, wherein plasma acceleration is provided in the discharge channel, wherein the parts of electrodes (1) arranged behind the dielectric bars (2) in the direction of plasma acceleration are positioned at an angle α to the discharge channel midline, with the value of angle α being selected on the condition: $10° \leq \alpha \leq 40°$.

23.   The method of claim 14, wherein plasma acceleration is provided in the discharge channel, wherein the parts of electrodes (1) arranged behind the dielectric bars (2) in the direction of plasma acceleration are made continuously narrowing in the said direction, with the maximal width d_{max} and the minimal width d_{min} of the electrodes (1) are selected on the condition: $d_{max}/d_{min} \geq 2$.

24.   The method of claim 14, wherein plasma acceleration is provided in the discharge channel defined by the insulator (3) wherein a slot is formed on the side of the discharge channel.

25.   The method of claim 14, wherein plasma acceleration is provided in the discharge channel wherein the width and length of one of electrodes (1) serving as an anode exceeds those of other electrode (1) serving as a cathode.